

MATH231BR HOMEWORK 2 (DUE THURSDAY, 2/12/26)

**Exercise 1.**

- (1) Let  $f: S_1 \rightarrow S_2$  be a morphism of sheaves over  $X$ . Give a reasonable definition of an *image* subsheaf  $\text{im}(f) \subseteq S_2$ .
- (2) Give a reasonable definition of a *cokernel* sheaf  $\text{coker}(f)$  over  $f$ .
- (3) Prove an analogue of the first isomorphism theorem for sheaves of abelian groups over spaces.
- (4) How does your first isomorphism theorem look on stalks?

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